

Environmental Science

A SURVEY OF STATISTICAL TECHNIQUES IN THE STUDY OF THE EFFECT OF  
THE LAND-LAKE BREEZE ON CHICAGO CLIMATOLOGY

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Chicago has lower atmospheric pollutant concentrations than inland cities of comparable size because of its proximity to Lake Michigan. During the summers of 2002 and 2003, particulate data was collected from atop Mertz Hall at Loyola University Chicago, which is approximately 60m high and 200m from Lake Michigan, on the north side of Chicago. This study examines the interaction between weather parameters (wind direction, temperature, humidity, etc) and atmospheric constituents (elemental particles, ozone, NO<sub>x</sub>, etc). Techniques employed include multiple regression, the Mann-Whitney test, polar graphs, and comparative boxplots. The designation of variables in this project is of particular interest, since due to the urban geography of Chicago, there are additional anthropogenic factors that interact with meteorological and atmospheric conditions. This survey of statistical techniques and technology and designation of variables will be used to further study data that is being generated from this project.